REMARKS/ARGUMENTS

The specification has been amended to add appropriate sequence identifiers (i.e., SEQ ID NO). Claims 13, 18-20 and 27-31 are active in this application. Claim 15 has been canceled. Support for terms of Claim 15 that have been incorporated into Claim 13 is found on page 3, lines 28- 38; page 4, lines 1-38; and page 5, lines 1-19. Support for the phrase "wherein the polypeptide is soluble in 60% methanol" added to Claims 13 and 31 is found on page 11, lines 1-2 of the specification. Support for the phrase "insecticidal activity" added to Claims 13 and 31 is found on page 9, lines 7-37; and page 10, lines 1-16. Support for the phrases starting "wherein X_1 satisfies" and including "where in X_7 satisfies" added to Claims 13 and 31 is found on page 4, lines 1-38; and page 5, lines 1-14. No new matter has been added.

The rejection of Claims 13, 15, and 18-20 under 35 U.S.C. §112, first paragraph ("written description") is respectively traversed.

The specification adequately describes the polypeptides of the claims as presented. Specifically, the specification describes with particularity a conserved, cysteine-rich structural motif defined by formula I (SEQ ID NO:1) $X_1CX_2CX_3CX_4CX_5CX_6CX_7$ that exhibits insecticidal activity. The specification describes with particularity that this motif comprises 6 cysteine residues that are set apart by 7 polypeptide subsequences of a defined length and a defined composition (see page 3, lines 33 –38; page 4, lines 1-3). For each subsequence X_n, a defined set of amino acid residues is explicitly provided (see page 4, lines 4-38). For example, for subsequence X_1, the specification discloses that "X_1 satisfies the sequence y_1y_2 wherein y_1 and y_2 each represent an amino acid selected from the group consisting of *alanine, serine, glycine and threonine*; or y_1 represents an amino acid selected from the group consisting of *alanine, serine, glycine and threonine,* and y_2 represents *glutamic acid or aspartic acid.*"

Nevertheless, the claims have been amended to further clarify the claimed polypeptides defined by formula I (SEQ ID NO:1). The phrase "having insecticidal activity" has been added to Claims 13 and 31 to clarify the functional limitation.

Definitions for subsequences X_1-X_7 have been added to Claims 13 and 31 replacing recitations to "dipeptides," "tripeptides," and so forth.

Since the Applicants identified a representative set of polypeptides having insecticidal activity in a purification fraction containing 60% methanol, the solubility of the claimed polypeptides in 60% methanol is a relevant identifying characteristic, and thus, this feature has been added to Claims 13 and 31. When Applicants compared the sequence of a TP isoform (from pea) against the sequence of leginsulin (from soybean), both sequences were found to contain this conserved motif and to share 65% sequence identity. Thus, the claims directed to a genus of polypeptides that could be isolated from different species of legume plants reasonably should include polypeptides having sufficient sequence variability so that distinct polypeptides such as TP, PA1b, and leginsulin would not be excluded from this genus defined by formula I (see Figure 7). Thus, it is not unreasonable for Applicants to include terms, such as "having at least 60% identity with SEQ ID NO:6 (TP) and SEQ ID NO:7 (PA1b)" to add a reasonable range of sequence variability since no part of the specification suggests any intention to limit the present invention to only the disclosed sequences.

The Applicants have characterized the insecticidal activity conferred by the motif defined by formula I of the present invention and have identified at least three examples of such polypeptides having the recited properties. Furthermore, in Figure 4 of Example 1 of the specification, Applicants provide mortality rates for *oryzae* weevils exposed to at least 9 different types of legumes (see page 9, lines 27- 37). Therefore, the specification unquestionably describes the genus of polypeptides utilized in the claimed methods and demonstrates Applicants' possession of the claimed invention.

The rejection under 35 U.S.C. §112, second paragraph has been addressed by the removal of the parenthesis marks placed before and after SEQ ID NO:1 in Claim 13. Withdrawal of the rejection is respectfully requested. The objection of Claim 13 is addressed by the insertion of a sequence identifier into Claim 13.

It is requested that the withdrawal of Claim 31 for being drawn to a non-elected invention be reconsidered. The claimed method for protecting plants (Claim 13) and the claimed method for protecting cereal seeds or products derived from cereal seeds (Claim 31) both utilize the same polypeptides of the present invention defined by formula I: $X_1CX_2CX_3CX_4CX_5CX_6CX_7$ (SEQ ID NO:1). Therefore, it would not be an undue burden to search the prior art to identify all references that disclose the utilization of polypeptides defined by formula I for killing insect pests to protect plants and to protect products derived from plants. Claim 31 has been amended in the event that the Examiner finds the withdrawal improper.

The rejection of Claims 13, 15, and 18-20 under 35 U.S.C. §112, first paragraph ("enablement") is respectively traversed.

The specification as filed provides sufficient instruction to enable a person skilled in the art to make and use the invention commensurate in scope with Claims 13 and 31 based on the following:

I. The specification teaches how to screen plants in order to identify candidates that are sources for polypeptides having the claimed insecticidal activity and comprising a motif defined by formula I. Figure 4 of Example 1 of the specification (see page 9, lines 27- 37) provides mortality rates for *oryzae* weevils exposed to several types of legumes tested, including cowpea (*Vigna unguiculata*), white and red bambora groundnut (*Vigna subterranea*), lentil (*Lens esculenta*), french bean (*Phaseolus vulgaris*), mung bean (*Vigna radiata*), adzuki bean (Vigna angularis), broad bean (*Vicia faba*), chickpea (*Cicer arietinum*),

and lupin (*Lupinus albus*). Because all legumes tested were toxic against a sensitive strain of weevils but not against a resistant strain, the Applicants reasonably concluded from the results that the same mechanism for causing insect toxicity is involved in all legumes tested (see page 10, lines 1-16). The toxicity assay provided in Example 1 can be applied to any plant of interest in order to determine the mortality curve or pattern for a given insect pest so that polypeptide candidates having insecticidal activity and comprising a motif defined by formula I (SEQ ID NO:1) of the present invention can be purified and subsequently sequenced. In addition, a program for analyzing mortality curves is provided on page 8, line 26 of the original application. Thus, a person skilled in the art could identify a plant candidate exhibiting insecticidal properties by following the disclosed method. By using such a method, Applicants are first to identify the insecticidal activities within the tested legume plants.

II. The specification teaches how to isolate polypeptides having the claimed insecticidal activity and comprising a motif defined by formula I from a plant extract.

After identifying an insecticidal activity in plant samples tested according to the method disclosed in Example 1, a person skilled in the art can isolate the polypeptide conferring the detected insecticidal activity by following the method disclosed in Example 2. As an example, the Applicants have purified several isoforms of TP polypeptides having the claimed insecticidal activity and comprising the conserved motif defined by formula I (SEQ ID NO:1) from pea extracts (see Example 2 starting on page 10). Applicants have determined the polypeptide sequence of the variants of TP polypeptides isolated using the disclosed method and following a referenced protocol (see page 10, line 23). Applicants have identified a conserved, cysteine-rich structural motif defined by formula I within such TP variants. Applicants have identified two distinct polypeptides, PA1b and Leginsulin,

containing the conserved motif of formula I. As noted in the prior response and here, Figure 7 of Example 2 of the specification (see page 14 lines 4-21) provides an alignment of TP protein, PA1b, and Leginsulin showing the amino acid composition within the motif for each respective polypeptide.

The TP protein isolated from peas, PA1b from peas, and Leginsulin from soybeans are representative species of the genus of polypeptides recited in Claims 13 and 31 because they satisfy all of the claim limitations as shown in Figure 7. The present disclosure teaches the solubility of the polypeptides of interest in 60% methanol. Thus, a person skilled in the art could isolate a number of distinct polypeptides having insecticidal activity and comprising a motif defined by formula I by following one or more conventional purification methods based on the teachings of the present disclosure.

Although the insecticidal activity of PA1b and Leginsulin are not directly shown by the Applicants in the present disclosure, the Applicants have published the insecticidal properties of PA1b as shown in a reference submitted by Applicants in the last response (Reference number 5 in Louis et al., *Plant Science* 167, p.705 -714 (2004)). Moreover, other research groups have confirmed that these polypeptides and other polypeptides comprising the motif defined by formula I have insecticidal activities (Louis et al).

III. Searching an established sequence databases in order to identify polypeptides having the claimed insecticidal activity and comprising a motif defined by formula I is within the scope of skills possessed by a person skilled in the art.

Other polypeptides having insecticidal activity and comprising the conserved motif defined by formula I (SEQ ID NO:1) can be identified by searching various established sequence databases available at the time of the invention. It is known how to perform database queries based a defined sequence of a conserved motif, such as the one provided by

the Applicants in formula I (SEQ ID NO:1). Routine procedures known and performed in the art need not be disclosed. Thus, Applicants have enabled one to distinguish between polypeptides having the limitations of Claim 13 and 31 from polypeptides that do not.

In Claims 13 and 31, a generic formula I: $X_1CX_2CX_3CX_4CX_5CX_6CX_7$ (SEQ ID NO:1) is provided, including a defined list of alternative amino acid residues that can be substituted for each position within defined subsequences represented by variables X_1, X_2, X_3, X_4, X_5, X_6, and X_7. This genus of polypeptides is sufficiently defined so that a person skilled in the art could utilize the disclosed structure of the conserved motif and the disclosed insecticidal activity to make and use various species of polypeptides having the claimed properties. Thus, Applicants requests the withdrawal of the rejection.

Applicants also request allowance of this application.

Respectfully submitted,

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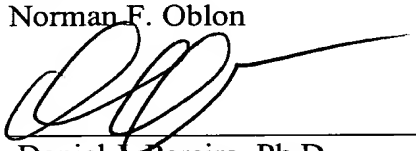

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